AN INVENTORY OF THE VERTEBRATES OF THE GRAND RIVER TERRACES, ASHTABULA COUNTY, OHIO

TIMOTHY O. MATSON

Associate Curator of Vertebrate Zoology
Cleveland Museum of Natural History
Cleveland, Ohio

Abstract

A two-year inventory of transient and resident vertebrate species within a 123.9 hectare wooded natural area in northeastern Ohio was conducted during 1982 and 1983. Twenty-eight species of fishes, 20 species of amphibians and reptiles, 96 species of birds, and 17 species of mammals were recorded for the area during the time period.

Introduction

In 1981, a tract of land located in northeastern Ohio was given to the Nature Conservancy which then placed the property under the supervision of the Cleveland Museum of Natural History. The tract is located in west-central Ashtabula County. A casual visit to the tract in July 1981 revealed that the area supported a number of rare plants, several stages of old field and secondary forest successional stages, and a hemlock swamp forest. As the initial step to plan a program of land and wildlife management, the Cleveland Museum of Natural History undertook both botanical and vertebrate inventories of the species utilizing or residing on the property. This report presents the results of the vertebrate inventory conducted during 1982 and the spring of 1983.

Description of Study Site

The Grand River Terraces Preserve is located at lat. 41°42′30″N and long. 80°52′30″W in west-central Ashtabula County, the northeastermost county in Ohio (Fig. 1). The tract of land consists of 123.9 hectares (306 acres) and lies entirely within Morgan Township.

The Grand River Terraces Preserve (hereafter referred to as the Terraces) borders the Grand River on the east and is characterized by a series of floodplain terraces. To the west of the floodplain terraces is a flat upland at an elevation of about 244 m above sea level. The maximum relief is approximately 12 m, and the elevation varies from below 232 m at the Grand River to about 244 m in the upland.

The soils are of the Canadice-Caneadea association and consist of old glacial lake bed clay deposits (Reeder et al. 1973). The study area is only slightly dissected and drainage is poor. As a result of the poor drainage and clay soils, several swamps are present within the upland forest and several intermittent streams have their headwaters in the area. Bronson Creek is the only permanent stream traversing the property and courses in a southeasterly direction near the southern border where it enters the Grand River (USGS East Trumbull Quadrangle 1970).

FIG. 1. QUADRANGLE LOCATION

The tract of land is divided into thirds of unequal size by Sweitzer Road which runs in an east-west direction and by Tote Road which courses north-south. The area to the north of Sweitzer Road is entirely wooded with secondary forest. Several shallow depressed areas serve as collecting basins which retain water and support *Sphagnum* moss. There are two hemlock swamp areas upon the property; the larger is positioned to the north of Sweitzer Road and is much more extensive than the smaller lying to the south of the road. The isolated stands of hemlock *(Tsuga canadensis)* create environments characteristic of plant communities in Canada. Otherwise hemlocks are confined to the ravine slopes or they occur as scattered, isolated individuals throughout the secondary forest.

The area to the south of Sweitzer Road is composed of old fields which support sapling trees of various species indicative of early secondary forest successional stages. Young secondary forests are found near the road but are replaced by mature hardwood forest to the south.

A wooded ravine dissects the western margin of the tract south of Sweitzer Road and is a major topographic feature of the area. An intermittent stream flows through the ravine; however, shallow pools within the shaded stream channel persist throughout dry periods.

The parts of the Grand River selected as sites where fish nets were placed varied in depth from 1 m to approximately 2.5 m. The bottom substrate consisted of silt and clay except near the mouth of Bronson Creek where some sand and gravel had been deposited. Submerged logs and branches hampered net placement and seining operations.

Bronson Creek was sampled from its mouth at the Grand River upstream to Sweitzer Road. The bottom substrate consisted of slit and clay near the mouth with increasing proportions of sand and gravel toward the headwaters. Water depths varied from several centimeters over riffles to 2 m in the deepest pools.

Methods

Field work was initiated in the early spring of 1982 and extended into the spring of 1983. Two 91.5 cm diameter hoop nets having 2.5 cm mesh with two 7.6 m wings were used in the Grand River to capture fish. In addition, a 4.6 m bag seine with 0.5 cm mesh was used to seine stretches of the river. During the spring of 1983 a 7.6 m bag seine also with 0.5 cm mesh was employed in the fish sampling.

Bronson Creek presented variable depths, widths, and flow rates throughout its course. The 4.6 m bag seine was used in conjunction with a 1.8 m seine having 0.5 cm mesh to capture fish. Notes on the species captured and their respective numbers at the sites were recorded. Voucher specimens collected in the field were placed into 10% formalin and transported to the laboratory for sorting and identification.

Adult amphibians and reptiles were uncovered by overturning logs, boards, and other debris found on the soil and by actively searching each habitat repeatedly in different seasons and under varying weather conditions. The adults were captured by hand, dip-net, or turtle nets having 76.2 cm diameter and 2.5 cm mesh, whereas amphibian larvae were sampled by dip-netting or seining. Evening visits to the study area were made in the spring and early summer of 1982 to search for amphibians at potential breeding sites.

Observations of avian species either observed visually or heard calling or singing during each visit to the study area were noted along with the number of individuals of each species. In 1982, a breeding bird study was conducted from May 17 to July 20. Eight transect lines coursing in an east-west direction were located 152 m distant, and the 75 stations on the transect lines were 122 m apart. Observations of species over a 10 min interval were recorded at each station three days per week until early July when the schedule was reduced to two days per week.

The species of mammals found in the study area were determined primarily by trapping and by visual observation. Several types of traps were employed to sample mammal species; they included Sherman live traps (7.62 x 8.89 x 22.86 cm), Victor mouse and rat traps, and pitfalls (three-pound coffee cans). A total of 1,227 trap nights were accumulated. During July 1982 trapping stations were positioned at 15 m intervals along the transect lines established for the breeding bird inventory. In the next spring traps were placed in selected habitats that were not considered to have been inventoried adequately previously.

All specimens collected during the course of the study were deposited in the vertebrate collections of the Cleveland Museum of Natural History.

Results

During the two years of study 28 species of fishes, 20 species of amphibians and reptiles, 96 species of birds, and 17 species of mammals were recorded for the study area. An annotated list of the vertebrate species occurring at the Terraces is presented in Table 1 (following article). It should be noted that the classification concerning relative abundance is a subjective judgment on the part of the primary investigator, and that the terms used are somewhat arbitrary although based upon numbers of individuals observed. A particular classification would not necessarily indieate equal numbers of individuals observed when applied to different species. Certain designations of relative abundance, such as "rare," may be better listed as "undetermined" when based on only one or very few observations of the species since time and techniques in searching and sampling may not have been adequate to determine fully the status of the species. Nevertheless, the species presented in Table 1 provide baseline data for the study area and should be viewed in that respect. As study of the area continues in years to come, additional species will undoubtedly be amended to the species list.

Discussion

Several of the vertebrate species listed in Table 1 are of particular importance to the fauna of Ohio because of their status within the state. The following species are listed by the Ohio Biological Survey (OBS), the Ohio Division of Wildlife (ODW), or the Ohio Division of Natural Areas and Preserves (DNAP) as being threatened (T) or endangered (E) with extirpation within the state; as being potentially threatened (P) or having restricted status (R); or as having undetermined status (S): *Hemidactylium scutatum* (E, ODW; T, OBS; P, DNAP); *Empidonax minimus* (S, OBS; S, DNAP); *Catharus fuscescens* (S, OBS); *Dendroica virens* (S, DNAP); and *Sphyrapicus varius* (S, DNAP).

Three *Hemidactylium scutatum* were found in three areas well distributed throughout the traet. Collecting sites ranged from water's edge in a hemlock swamp to moist ravine slopes.

Sphyrapicus varius was reported by Hicks (1933) to be very local in distribution in Ashtabula County but was observed during the summer in 12 different localities. In his 1935 publication, Hicks reported the finding of 16 nests or broods of young between 1925 and 1932 in the Pymatuning Bog area and in parts of Denmark and Wayne townships. James K. Bissell (personal communieation 1983, Cleveland Museum of Natural History) reported a pair of *S. varius* moving in and out of a nesting hole at the Morgan Swamp on June 21, 1979. Observations of *S. varius* for three consecutive years (1981–83) indicate that the species probably also nests at the Grand River Terraces.

Hicks (1933) considered *Empidonax minimus* a rare summer resident in Ashtabula County and cites 12 localities where summer observations were recorded. A later study (Hicks 1935) considered this species to be a very rare summer resident in Ashtabula and six other northern counties. During the breeding bird survey of 1982 the species was heard calling during May and June on the broad floodplain meadow of Bronson Creek. Although no eggs, nest, or young were observed, it seems probable that the species nests on the Terraees.

The distribution of *Catharus fuscescens* in Ohio is primarily in the northern 24 counties and mostly in the northeast (Hicks 1935). The distribution is general within Ashtabula County, and the species ranges from uncommon to abundant (Hicks 1933). At least several pairs breed on the Grand River Terraces.

Dendroica virens was considered to exhibit a general but local and uncommon distribution in Ashtabula (Hicks 1933). Although not present in high densities during the breeding season, several singing males were scattered throughout the Terraces. Hicks (1933) found that most nesting activity occurred where hemlock grew. In the present study most activity during the breeding season was in the mature, deciduous forest on the Grand River floodplain.

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References

American Fisheries Society. 1980. List of common and scientific names of fishes from the United States and Canada. *Special Publication* No. 17, 4th ed.

American Ornithologists' Union. 1983. *Checklist of North American birds,* 6th ed.

Bishop, Sherman C. 1943. *Handbook of salamanders.* Ithaca, N.Y.: Comstock Publishing Co.

Bole, B. P., Jr., and P. N. Moulthrop. 1942. The Ohio recent mammal collection in the Cleveland Museum of Natural History. *Scientific Publication of The Cleveland Museum of Natural History* 5(6):83–181.

Burt, William H. 1957. *Mammals of the Great Lakes region.* Ann Arbor: The University of Michigan Press.

Collins, J. T., J. E. Huheey, J. L. Knight, and H. M. Smith. 1978. Standard common and current scientific names for North American amphibians and reptiles. *Society for the Study of Amphibians and Reptiles, Herpetological Circular* No 7.

Conant, Roger. 1951. *The reptiles of Ohio.* Notre Dame, Ind.: University of Notre Dame.

Eddy, Samuel. 1969. *The freshwater fishes.* Dubuque, Iowa: Wm. C. Brown Co.

Gottschang, Jack L. 1981. *A guide to the mammals of Ohio.* Columbus: The Ohio State University Press.

Hall, E. R. and K. R. Kelson. 1959. *The mammals of North America.* New York: The Ronald Press Co.

Hicks, Lawrence E. 1933. The breeding birds of Ashtabula County, Ohio. *The Wilson Bulletin* 45:168–195.

Hicks, Lawrence E. 1935. Distribution of the breeding birds of Ohio. *Ohio Biological Survey. Bulletin* 32. vol. 1, No. 3:125–190. Columbus: The Ohio State University Press.

Ohio Department of Natural Resources, Division of Natural Areas and Preserves. Ohio Natural Heritage Program. 1979. Special Animals.

Reeder, N. E., V. L. Riemenschneider, and P. W. Reese. 1973. *Soil Survey of Ashtabula County, Ohio.* Washington: U.S.D.A., Soil Conservation Service in cooperation with Ohio Department of Natural Resources. Division of Lands and Soil and Ohio Agricultural Research and Development Center.

Robbins, C. S., B. Brunn, and H. S. Zim. 1966. *Birds of North America.* New York: Golden Press.

Trautman, Milton B. 1957. *The fishes of Ohio.* Columbus: The Ohio State University Press.

United States Department of the Interior Geological Survey. 1959; photorevised, 1970. East Trumbull Quadrangle, Ohio—Ashtabula County, 7.5 minute series.

Walker, Charles F. 1946. The amphibians of Ohio: Part I, frogs and toads. *Ohio State Museum Science Bulletin,* Vol. 1, No. 3. The Ohio Historical Society, Columbus.

TABLE 1
Annotated list of the vertebrate species observed at the Grand River Terraces, Ashtabula County, Ohio, during 1982 and 1983

Species	*Abundance Designation*	*Distribution Annotations*
FISH		
Esox americanus	Uncommon	Slow-flowing sections of Bronson Creek where a silt bottom substrate occurred
Esox lucius	Uncommon	One specimen netted in the Grand River
Campostoma anomalum	Uncommon	Grand River
	Common to abundant	Over portions of Bronson Creek where gravel bottoms occurred
Ericymba buccata	Uncommon	Bronson Creek
Notemigomus crysoleucas	Common	Slow-flowing waters of Bronson Creek where a silt bottom substrate occurred
Notropis chrysocephalus	Uncommon	Grand River
	Common	Throughout Bronson Creek
Notropis rubellus	Rare	One specimen netted in the Grand River
Notropis spilopterus	Uncommon	Bronson Creek where a silt bottom substrate occurred
Notropis stramineus	Rare	One specimen netted in the Grand River at the mouth of Bronson Creek where a sand and gravel bottom substrate occurred
Notropis umbratilis	Common	Grand River and Bronson Creek
Notropis volucellus	Common	Bronson Creek
	Uncommon	Grand River
Pimephales notatus	Common to abundant	Throughout Bronson Creek
Semotilus atromaculatus	Uncommon	Grand River
	Common to abundant	Throughout Bronson Creek
Catostomus commersoni	Common	Bronson Creek where a silt bottom substrate occurred
Hypentelium nigricans	Common	Bronson Creek where a sand and gravel bottom substrate occurred
Moxostoma erythrurum	Uncommon	Grand River
Ictalurus melas	Rare	One individual captured in the Grand River
Noturus flavus	Uncommon	Two individuals captured at the mouth of Bronson Creek in Grand River
Percopsis omiscomaycus	Uncommon	Grand River
	Common	Slow-flowing sections of Bronson Creek where a silt bottom substrate occurred
Culaea inconstans	Uncommon	Bronson Creek tributary along western border of the Terraces
Ambloplites rupestris	Uncommon	Grand River and Bronson Creek
Lepomis cyanellus	Rare	One individual netted in lower Bronson Creek
Lepomis gibbosus	Uncommon	Grand River and Bronson Creek
Lepomis macrochirus	Uncommon	Grand River
	Common	Lower Bronson Creek
Micropterus salmoides	Common	Individuals with a total length of $\leq$ 12 cm common; no larger individuals observed in Bronson Creek
Pomoxis annularis	Uncommon	Grand River; small individuals $\leq$ 8 cm common in Bronson Creek
Etheostoma nigrum	Common	Slow-flowing sections of Bronson Creek where a silt or sand substrate occurred
Percina maculata	Uncommon	Grand River
	Common	Lower section of Bronson Creek
AMPHIBIANS		
Ambystoma maculatum	Common	Swamps and woodland ponds in spring; larvae common in breeding ponds
Notophthalmus viridescens	Uncommon	Few efts found; no adults or larvae detected in any pond
Eurycea bislineata	Rare	One individual located
Hemidactylium scutatum	Uncommon	Swamp margins and on wooded ravine slopes
Plethodon cinereus	Common	Throughout the Terraces
Plethodon glutinosus	Uncommon	Moist, wooded ravine slopes N of Sweitzer Road
Desmognathus ochrophaeus	Common	Ravines and persistently moist, wooded slopes
Bufo americanus	Common	Throughout the Terraces
Hyla crucifer	Common	Swamps and woodland ponds in spring; widely distributed throughout the forest after the breeding season

Species	*Abundance Designation*	*Distribution Annotations*
Hyla versicolor	Common	Throughout the Terraces
Rana catesbeiana	Rare	One individual observed along the Grand River; one larva from Bronson Creek
Rana clamitans melanota	Common	Swamp areas and Bronson Creek floodplain
Rana palustris	Uncommon	One small chorus heard on Bronson Creek floodplain
Rana sylvatica	Common to abundant	Swamps in the early spring forest and wooded ravines thereafter
REPTILES		
*Diadophis punctatus***	Rare	One observation
Elaphe obsoleta	Rare	One observation
Thammophis sirtalis	Common	Throughout the Terraces
Nerodia sipedon	Uncommon	Along the Grand River and Bronson Creek
Chelydra serpentina	Common	Grand River
Trionyx spinifera	Common	Grand River
BIRDS		
Ardea herodias	Common	Overhead flights
Branta canadensis	Common	Overhead flights
Aix sponsa	Common	Along the Grand River and on the Bronson Creek meadow when flooded
Cathartes aura	Common	Overhead flights
Accipiter striatus	Rare	One observation
Accipiter cooperii	Common	Throughout the Terraces
Buteo jamaicensis	Uncommon	Overhead flights
Buteo lineatus+*	Common	Observed or heard flying overhead
Falco sparverius	Rare	One observation
Bonasa umbellus+*	Common	Throughout the Terraces
Charadrius vociferus	Uncommon	Overhead flights
Scalopax minor+*	Common	Open old field and surrounding secondary forest
*Zenaida macroura**	Common	Along Sweitzer and Tote roads and field edges
*Coccyzus erythropthalmus**	Common	Secondary forest and old fields
Coccyzus americanus	Common	Secondary forest and old fields
Bubo virginianus	Rare	One observation
*Strix varia**	Common	Throughout the Terraces
Megacerle alcyon	Common	Observed along the Grand River
*Calaptes auratus**	Common	Throughout the Terraces
*Dryocopus pileatus**	Uncommon to common	Holes evident, numerous observations
*Melanerpes carolinus**	Common	Throughout the Terraces
*Sphyrapicus varius**	Uncommon	Along Sweitzer Road at the Grand River bridge and around the hemlock swamps
*Picoides pubescens**	Common to very common	Throughout the Terraces
*Picoides villosus**	Common	Throughout the Terraces
Tyrannus tyrannus	Rare	One observation
*Myiarchus crinitus**	Very common	Throughout the Terraces
Sayornis phoebe+*	Common	Primarily along the Grand River
*Empidonax virescens**	Common to very common	Throughout the Terraces
*Empidonax minimus**	Rare to uncommon	Along Bronson Creek and near hemlock swamps
Contopus virens	Very common to abundant	Throughout the Terraces except for the old field
Hirundo rustica	Uncommon	Flights over the Grand River at the Sweitzer Road bridge
*Cyanocitta cristata**	Very common	Throughout the Terraces
Corvus brachyrhynchos+*	Very common	Throughout the Terraces
*Parus atricapillus**	Very common	Throughout the Terraces
Parus bicolor	Common	Throughout the Terraces
*Sitta carolinensis**	Common	Throughout the Terraces
Sitta canadensis	Uncommon	Bronson Creek floodplain and hemlock swamp forest
Certhia familiaris	Uncommon	Grand River floodplain
*Troglodytes aedon**	Common	Grand River floodplain and open areas within the forest
Troglodytes troglodytes	Rare	One observation in forested ravine
Dumetella carolinensis	Common	Along the roads, Bronson Creek and Grand River floodplains and old field edges

Species	*Abundance Designation*	*Distribution Annotations*
Toxostoma rufum	Uncommon	Along the roads and old field edges
*Turdus migratorius**+	Very common	Throughout the Terraces
*Hylocichla mustelina**+	Common	Throughout the Terraces
Catharus guttatus	Common	Throughout the Terraces during spring migration
Catharus ustulatus swainsoni	Common	Throughout the Terraces during spring migration
*Catharus fuscescens**	Common	Throughout the Terraces
Sialia sialis	Uncommon	Along roads and the old field S of Sweitzer Road
*Polioptila caerulea**	Common	Along the roads and on the Grand River floodplain
Regulus calendula	Uncommon to common	Hemlock swamps, ravines and the Grand River floodplains
*Bombycilla cedrorum**	Common	Along the roads and hemlock swamp
*Sturnus vulgaris**+	Uncommon	Along the roads and in overhead flight
Vireo flavifrons	Common	Throughout the Terraces except for the old fields
Vireo solitarius	Uncommon	Young secondary forest
*Vireo olivaceous**	Abundant	All forested areas
Vireo philadelphicus	Uncommon	Along the roads in secondary forest
Mniotilta varia	Rare	One observation, Grand River floodplain
Prothonotaria citrea	Rare	Two observations beside the Grand River
Vermivora chrysoptera	Rare	One observation, young secondary forest
Vermivora peregrina	Common	Along the roads and wooded ravines
*Vermivora pinus**	Common	Along the roads and old fields
Vermivora ruficapilla	Uncommon to common	Forest-old field ecotone and Bronson Creek floodplain
Parula americana	Rare to uncommon	Roadsides
*Dendroica petechia**	Common	Floodplains, old field, and roadsides
Dendroica magnolia	Uncommon	Floodplains
Dendroica coronata	Common	Throughout the Terraces
*Dendroica virens**	Common	Throughout the Terraces
*Dendroica cerulea**	Common	Grand River floodplain and areas of mature forest
Dendroica fusca	Rare to uncommon	Bronson Creek floodplain and roadsides
Dendroica pensylvanica	Uncommon	Along roads in secondary forest
Dendroica castanea	Rare	One observation
*Seiurus aurocapillus**+	Abundant	All upland forests
Seiurus motacilla	Rare	One observation, Bronson Creek valley
*Geothlypis trichas**	Common	Floodplains, old field, openings in forest, and along roads
Icteria virens	Rare	Two observations on the Grand River floodplain
Wilsonia citrina	Very common	Upland forest and floodplain of the Grand River
Wilsonia canadensis	Rare to uncommon	Two observations on the Bronson Creek floodplain
*Setophaga ruticilla**	Common	Floodplains, ravines and openings in upland forest
Passer domesticus	Uncommon	Along roads
Agelaius phoeniceus	Uncommon	Mostly overhead flights
*Icterus galbula**	Common	Throughout the Terraces but absent from the old fields
*Quiscalus quiscula**	Common	Observed primarily along the roads and in flight
*Molothrus ater**	Common	Throughout the Terraces
*Piranga olivacea**	Common	Throughout the Terraces but most abundant on the Grand River floodplain
*Cardinalis cardinalis**	Very common to abundant	Throughout the Terraces
*Pheucticus ludovicianus**	Common	Throughout the Terraces
*Passerina cyanea**	Common	Throughout the Terraces but most common along the roads
Carpodacus purpureus	Uncommon	Along roads
*Carduelis tristis**	Common	Old field, roadsides, and in flight
*Pipilo erythrophthalmus**	Common	Roadsides and forest-old field ecotone
Junco hyemalis	Uncommon	Roadsides, old field and secondary forest
Spizella passerina	Uncommon	Roadsides, forest-old field ecotone, Bronson Creek floodplain
*Spizella pusilla**+	Common	Roadsides and old field
Zonotrichia albicollis	Rare	One observation, near the Sweitzer Road bridge
Passerella iliaca	Rare	One observation
*Melospiza melodia**+	Common	Roadsides, old field, swamps

Species	*Abundance Designation*	*Distribution Annotations*
MAMMALS		
Didelphis virginiana	Present	Status undetermined
Sorex cinereus	Common	Throughout the Terraces
Blarina brevicauda	Common	Throughout the Terraces
Procyon lotor	Common	Throughout the Terraces
Mephitis mephitis	Present	Status undetermined
Marmota monax	Common	Floodplains, upland forest, old field
Tamias striatus	Common	All forested areas
Sciurus niger	Common	Floodplains, upland forest
Tamiasciurus hudsonicus	Common	Forested areas
Glaucomys volans	Present	Status undetermined
Castor canadensis	Common	Along the Grand River
Peromyscus leucopus	Common	Throughout the Terraces
Microtus pennsylvanicus	Common	Swamps, ravines, Bronson Creek floodplain
Ondatra zibethica	Present	Status undetermined along the Grand River
Mus musculus	Rare	One capture
Sylvilagus floridanus	Common	Secondary forest, old field and roadsides
Odocoileus virginiana	Common	Throughout the Terraces

*Species of birds considered as breeding species at the Grand River Terraces.

*+Species of birds for which nests, eggs, or young were located.

**Species not observed by the primary investigator or assistants but reported by a reliable source (Robert Segedi, Cleveland Museum of Natural History, personal communication 1982).